

Ulvaceæ are by both referred to *Zoospermeæ*; but it is to be observed, that in *Tetraspora lubrica* the four spores originate from a single globose body, precisely as in *Delesseria* and other genera with *Tetraspores*, and the quaternary arrangement in *Porphyra* appears to be of a very similar nature. We have, at least, in *Porphyra vulgaris* witnessed the division of cells into four distinct spores, each furnished with its proper envelope. *Palmella rupestris* presents also an analogous structure. We are inclined then to think, when the matter has been further studied, that they may be safely removed from their present very anomalous position. *Chaetophora*, again, if Decaisne's principles be fully carried out, must be removed to his *Aplosporeæ*, for the simple spores are as fully developed in the only species in which they have been at present observed as in any genus whatever.

One of the most useful points as regards species is the settling the true position of *Zonaria squamaria*, which is raised to the rank of a genus under the name of *Peyssonellia*, and it appears clearly to be allied to *Sphaerococcus*. The genus *Ralfsia* (= *Zonaria deusta*), which appears not to have been known either to Decaisne or Agardh, as clearly belongs to the Aplosporic group.

In conclusion we beg leave to direct attention to a very interesting work by Meneghini* on the Algæ of Italy and Dalmatia, of which we have received the first fasciculus from the author, and we understand that another has appeared. It will consist of about ten fasciculi.

PROCEEDINGS OF LEARNED SOCIETIES.

ZOOLOGICAL SOCIETY.

Dec. 14, 1841.—Richard Owen, Esq., Vice-President, in the Chair.

Mr. Waterhouse laid before the Meeting his descriptions of numerous species of Coleopterous insects from the southern parts of South America, which had been placed in his hands for that purpose by H. Cuming, Esq. and C. Darwin, Esq. Those from Mr. Cuming formed part of a collection made by Mr. Thomas Bridges, who expressed a wish that the specimens should be laid before the Zoological Society. Unfortunately, the exact localities of the insects are not mentioned in Mr. Bridges's notes, but there is reason to believe

seems inclined to deny two modes of fructification altogether, and it must be confessed that his views, especially in *Choristosporeæ* (= *Florideæ*), are maintained with great ingenuity, though such generally received opinions as that of the diocious character of these Algæ cannot very easily be set aside. The typical form of fructification he considers to be the quadripartite granules, whether more or less superficial or arranged in podlike processes, and the so-called capsules he considers as mere modifications of these granules. This is one of the main points of difference between Decaisne and Agardh, and somewhat analogous points of difference exist in the other orders. His explanation of the structure of *Ulvaceæ* appears to us less clear than other points.

* *Alge Italiane e Dalmatiche*, illustrate Dal Prof. G. Meneghini. Padova, Marzo 1842.

they were collected in the neighbourhood of Petorca. The species described belong to the genera *Nyctelia* and *Listroderes*, or are nearly allied to those two groups.

Section HETEROMERA.

Family NYCTELIIDÆ.

Genus NYCTELIA.

Species from the collection of Thomas Bridges, Esq.

NYCTELIA LÆVIS. *Nyct. atra, nitida*; capite anticè punctis sparsis notato; thorace mediocritè convexo, latiore plusquàm longo, parte anticà angustiore, ad latera modicè rotundato, margine anteriore, pilis brevibus flavescens fimbriato, angulis et anticis et posticis productis et subacutis, dorso punctis parvulis dispersis: elytris lævibus convexis, brevibus, ovatis, apice producto et subacuto; carinà laterali crenulatà; segmentis abdominalibus rugis irregularibus longitudinalitè impressis.

Long. corp. $11\frac{1}{2}$ lin.; lat. $6\frac{3}{4}$; lat. thoracis, $4\frac{2}{3}$; long. ib. $2\frac{3}{4}$.

Black and glossy; general form ovate; thorax and elytra convex above, and presenting no distinct sculpturing. Head with scattered punctures in front, smooth behind. Thorax with very fine scattered punctures, and these most numerous on the fore part: parallel with, and at a short distance from the lateral margins of the thorax is an indistinct line on each side, formed by the somewhat abrupt termination of the convex discoidal portion at this part; the space between this line and the outer margin is nearly plane, and presents a few indistinct irregular rugæ, having a tendency to a transverse disposition. The thorax is broader than long, the width to the length bearing very nearly the proportion of 8 to 5; the middle of the thorax and hindermost part are about equal in width, but from the middle to the front the width gradually decreases; in front it is emarginated, and the anterior margin is furnished with a fringe of short, dense, yellowish hairs; the posterior margin presents an undulating line, encroaching on the body of the thorax on each side about midway between the mesial line and the posterior angle, which is produced. The elytra are very convex, and nearly of an ovate form; they are widest in the middle, and the apical portion is produced; the lateral keel (which forms the outer boundary of each elytron, viewing the insect from above) is not very prominent, and is indistinctly crenulated: this ridge does not extend to the apex of the elytron, but terminates about two and a half lines from that point: between the apex and the terminal point of the keel is an oblique ridge: the sutural portion of the elytra is distinctly indented near the scutellum, and less distinctly so at other parts. The mentum is coarsely punctured: the prosternum and mesosternum are coarsely punctured in the middle, and the punctures are confluent: the metasternum has small and somewhat irregular longitudinal rugæ in the middle, and similar rugæ are observable on the first, second, and anterior half of the third abdominal segments. The legs are black, but the tip of the femora and base of the tibiæ are pithy.

Very many specimens of this species were sent to this country by

Mr. Bridges, and as I have reason to believe they will be distributed in most of the public and private entomological collections, I shall regard it as a type for comparison in describing some other species of the same genus.

NYCTELIA LÆVIS, var. *RUFIPES*. Many specimens of a *Nyctelia* agreeing with the *N. lævis*, but differing in having the legs and antennæ of a pitchy red colour, were contained in Mr. Bridges's collection. Of these red-legged specimens, as well as of those having the legs concolourous with the body, there are males and females; but the red-legged specimens are generally rather narrower, and often have a slight trace of transverse depressions on the outer side of the elytra; the difference of form and sculpturing, however, is not constantly combined with the red colouring of the legs and antennæ, and as in some other species of *Nyctelia* and *Epipedonota* I have found a similar difference in the colouring of the legs, &c., I cannot regard that character as specific.

NYCTELIA TRANSVERSO-SULCATA. *Nyct. atra, nitida; capite anticè sparsim punctato: elytris vix duplò latioribus quàm longis, anticè potiusquàm posticè angustioribus, angulis productis, subacutis: elytris mediocritè convexis, brevibus, ovatis, apice producto, sulcis haud ad medium attingentibus, profundis et levitè undulatis, transversim insculptis; segmentis abdominalibus ferè lævibus.*

Long. corp. 9 lin.; lat. $5\frac{1}{4}$.

This species is smaller than the *N. lævis*, and the thorax and elytra are less convex. The head has a few scattered punctures in front, and numerous very fine punctures on the hinder part, near the eyes; the remaining portions are smooth. The thorax is impunctate, but little convex above, and has two indistinct foveæ on each side near the posterior angles, and joining the hinder margin. The elytra are ovate and slightly convex; the apical portion is produced, and has the outer margin slightly reflected: the lateral keel of the elytra is very prominent, and distinctly crenulated: extending inwards from this keel, to about the middle of the elytron, are a series of transverse and slightly irregular grooves, about fourteen in number, on each elytron; the length of these grooves (the interstices of which are convex) varies so, that they all terminate nearly at the same distance from the suture. On the space between these transverse *sulci* and the suture are two longitudinal striæ, which are somewhat indistinct, and interrupted in parts, excepting on the apical portion of the elytron, where the innermost of the two striæ is well marked, and the suture of the elytra is at this part somewhat elevated. Numerous oblique furrows are observable on the produced apical portion of the elytra. The portion of the elytra which lies below the keel presents no distinct sculpturing. The abdominal segment presents scarcely any trace of longitudinal rugæ. The legs are black, but have a slightly pitchy hue.

Species of *Nyctelia* from the collection formed by C. Darwin, Esq., during the voyage of H.M.S. Beagle.

NYCTELIA PLICATA. *Nyct. ovata, nigra, nitida; capite anteriore crebrè punctato, posteriore ferè lævi; thorace transverso, elytris*

angustiore; *angulis posticis productis, obtusis, suprà ad medium pauld convexo, et crebrè punctato*; *elytris latis, subovatis, convexis, sulcis profundis transversalibus, a margine externo ferè ad suturam ductis, plagà suturali profundè indentatà.*

Long. corp. (♂) 13 lin.; lat. $7\frac{1}{2}$; vel, long. $11\frac{1}{2}$ lin., lat. $6\frac{1}{2}$ lin.

Long. corp. (♀) $12\frac{3}{8}$ lin., lat. $7\frac{1}{2}$ lin.

Hab. Port Desire.

This species is considerably larger than *N. levis*; the thorax is proportionately broader and shorter, and the produced apical portion of the elytra is dilated and depressed. The head is thickly punctured in front, and there are numerous punctures at the sides above and behind the eyes. The thorax is about twice as broad as long; the broadest part is behind, but till anterior to the middle it scarcely decreases in width; from the middle to the fore-part the transverse diameter is gradually lessened, so that the lateral margins form a gentle curve; the anterior portion is emarginated, and the posterior margin is rather strongly sinuated; the anterior angles are acute, and the posterior angles are rounded. The upper surface of the thorax is convex in the middle, but towards the sides it is slightly concave; it is thickly punctured, and the punctures are many of them confluent; on the disc the punctures are much less numerous. The elytra are about one-fourth broader than the thorax (rather less in the male sex), and about one-fourth longer than broad; they are very convex, indented at the suture, and furnished with a series of nearly transverse indentations, about eighteen or twenty in number, which commence at the lateral keel and terminate about one-eighth of an inch short of the suture; the space between these transverse folds and the suture is apparently smooth; but with a moderately strong lens some very minute tubercles may be observed scattered on this part, as well as on the interspaces of the transverse indentations, which are about equal in width to the grooves: the apical portion of the elytra is considerably produced, and the produced part is broad and somewhat depressed, and has the upper surface rugose. The mentum is coarsely punctured, and the under side of the head is thickly punctured: the prosternum is coarsely punctured in the middle, and has some irregular rugæ at the sides; at the lateral margin is a series of small transverse rugæ: the mesosternum and metasternum have irregular rugæ in the middle, and the two first and half of the third abdominal segments have small irregular longitudinal rugæ; the remaining two abdominal segments are finely punctured.

NYCTELIA SOLIERI. *Nyct. ovata, nigra, nitida*; *capite anticè punctato, posticè levi*; *thorace transverso, elytris angustiore*; *angulis posticis productis, suprà apud medium pauld convexo, et levi*; *elytris anticè apud plagam suturalem levitè impressis, et sulcis transversis paulo irregularibus a margine laterali ferè ad suturam ductis.*

Long. corp. $11\frac{3}{4}$ lin.; lat. $6\frac{3}{4}$ lin.

Hab. Patagonia.

This species resembles the *N. plicata*, but differs in having the thorax smooth; the elytra are rather narrower, and the apical pro-

duced part is shorter and broader; they are scarcely indented at the suture, excepting in a slight degree towards the scutellum; the transverse folds are less regular, often dividing into two branches, and approach more near to the suture. A transverse section of the elytra of *N. plicata* would present a convex upper surface near the suture, but at the part where the grooves commence the line would be straight (though sloping downwards to the lateral keel), or even slightly concave; whilst in *N. Solieri* a similar section would present an even convex curve. Scattered punctures are observable on the fore-part of the head, and a shallow transverse depression is situated between the eyes; the thorax is nearly twice as broad as long, convex in the middle, but slightly concave towards the lateral margins: with a moderately strong lens some minute punctures are visible, rather thinly scattered over the surface. The elytra are ovate, the length to the width bearing about the proportion of 7 to 9.

NYCTELIA DARWINII. *Nyct. breviter ovata, convexa, nigra, nitida; capite subpunctato; thorace paulò ad partem anteriorem quàm posticam angustiore, lævi, convexo; elytris subrotundatis, valdè convexis, lævibus, marginibus lateralibus crenulatis.*

Long. corp. $11\frac{2}{3}$ lin.; lat. 8 lin.; vel, long. 11 lin.; lat. $7\frac{1}{4}$ lin.

Hab. Port Desire.

This species is remarkable for its broad and very convex form and deficiency of sculpturing, having the upper surface of the thorax and elytra smooth and glossy. The head is finely punctured: the thorax is twice as broad as long, and convex; a groove runs parallel with and close to the lateral margins, and a similar groove is observable on the anterior margin, though here it is less strongly marked. Elytra rather more than one-third broader than the thorax, and the length and breadth are very nearly equal, if we exclude the produced apical portion, which is broad, depressed, and nearly of a semicircular form. The lateral keel is distinctly crenulated, and separated by an adpressed line. The underside of the thoracic segments are rugose in the middle, and the first and second abdominal segments have irregular longitudinal rugæ; the third segment presents a faint trace of similar rugæ at the base; the other segments are smooth.

The spines at the apex of the posterior tibiæ are longer than usual in the genus.

Nyctelia Darwinii, var.? minor (long. corp. $8\frac{2}{3}$; lat. $6\frac{1}{3}$); elytris rotundatis apice paulò producto et angustiore.

Hab. Port Desire.

NYCTELIA FITZROYI, Curtis, MSS. *Nyct. subrotunda, convexa, nigra, nitida; capite utrinque punctis paucis adperso; thorace lævi, convexo, anticè latiore, angulis posticis acutis; elytris rotundatis, ad apicem productis, convexis, lævibus, margine externo crenulato; antennis pedibusque piceo-rubris.*

Long. corp. $10\frac{1}{2}$ lin.; lat. 8 lin.

Hab. Port Desire.

This species was first discovered by Capt. King, and will be here-

after described in detail by Mr. Curtis, whose MS. name I have adopted. Two specimens were found by Mr. Darwin at Port Desire : it approaches very near in size and general characters to *N. Darwinii*, but differs in having red legs and antennæ, in being of a broader form, in having the legs less rough, the lateral keel of the elytra less prominent, and not so distinctly crenulated, and the spurs or spines at the apex of the posterior tibiæ are much smaller. The length of the elytra is rather less than the width, if the produced apical portion be omitted ; and if included in the measurement, the length very slightly exceeds the width ; they are very convex and smooth, and so is the thorax, which is twice as broad as long, and considerably narrower before than behind. The head is sparingly punctured.

NYCTELIA GRANULATA, Curtis, MSS. *Nyct. atra, nitida, subrotundata ; capite transversim impresso, anticè punctato ; thorace subquadrato, ad latera crenulato, suprâ convexo, lævi ; elytris rotundatis, apice paulò productis, suprâ concavis, ad suturam depressis, rugis validis et irregularibus obsitis, his in dorso plerumque longitudinalibus et prope latera obliquè dispositis.*

Long. corp. $8\frac{1}{4}$ lin. ; lat. 6 lin.

Hab. Cape Negro.

This, together with several nearly allied and very remarkable species of *Nyctelia*, occurs in Capt. King's collection, and will be hereafter characterized in detail by Mr. Curtis. The specimen from which the above short description is taken forms part of Mr. Darwin's collection, and was found at Cape Negro. The legs are very rough, being thickly covered with tubercles, and they are shorter than in most of the species of *Nyctelia*. The whole upper surface of the elytra is covered with rugæ, and these are very strongly marked, and though very irregular, they have a general longitudinal direction on the depressed space on the middle of the elytra. This sutural depression, which is about two lines in width, is bounded on each side by a broad and slightly elevated ridge ; between this ridge and the outer margin the rugæ have a tendency to form oblique lines. A few fine punctures are observable on the fore-part of the thorax, and on the sides are two grooves placed closely together, and parallel with and near the lateral margin ; the narrow ridge between the two grooves, as well as the marginal ridge, is crenulated.

NYCTELIA PUNCTICOLLIS. *Nyct. ovata, atra, nitida ; thorace distinctè et crebrè punctato ; elytris tuberculis minutis, et ad latera rugis transversis irregularitèr impressis, his non forte distinctis.*

Long. corp. $9\frac{3}{4}$ lin. ; lat. 6 lin.

Hab. Bahia Blanca.

This species is rather smaller than the *N. lævis*, and has the thorax and elytra less convex. The head is rather thickly and coarsely punctured, excepting on the vertex. The thorax is thickly and coarsely punctured, and the punctures are for the most part confluent ; a distinctly impressed line runs parallel with and close to the margins ; the lateral margins are obscurely crenulated. The elytra are of a broad ovate form, and the apical produced portion is convex

and rounded at the apex. The lateral keel of the elytra is distinctly crenulated, and transverse shallow furrows run inwards from this margin, leaving interspaces rather broader than the furrows, which, for the most part, are about a line, or rather less, in length. On the interspaces between the furrows, and the whole upper surface of the elytra, are very minute scattered tubercles; these are very indistinct towards the suture, near which are one or two very faint striæ. The labrum is coarsely punctured, and the underside of the head is also punctured. The under surface of the prothorax is covered with small tubercles, from each of which springs a hair; between the legs, the under side of the prothorax and mesothorax is coarsely punctured. The first, second and third of the abdominal segments are covered with distinct longitudinal rugæ, and the apical segments are punctured beneath.

Several specimens of this species were collected at Bahia Blanca by Mr. Darwin, who says they are 'tolerably abundant on sand-hillocks.' A *Nyctelia* in Mr. Darwin's collection, from Rio Negro, resembles the present species, excepting that it has pitchy red legs and antennæ.

NYCTELIA SUBSULCATA. *Nyct. ovata, atra; thorace transverso distinctè punctato; elytris rugis tuberculisque minutissimis; sulcis transversis aliquanto irregularibus ad latera insculptis.*

Long. thoracis elytrorumque, $9\frac{1}{2}$ lin.; lat. $5\frac{2}{3}$ lin.

Hab. Mendoza.

This species is very closely allied to the *N. puncticollis*, and it is with considerable hesitation that I venture to describe it as distinct, more especially as Mr. Darwin's collection contains but one specimen, and that has lost its head and legs; this specimen, however, differs considerably in form from any of the numerous examples of *N. puncticollis* which I have before me. The thorax is narrower and less thickly punctured; the elytra are more elongated, and the lateral transverse grooves are more distinct and regular.

The thorax is transverse, and the length is equal to rather more than half the width; the middle and hinder parts are very nearly equal in width, and the anterior portion is contracted; the surface is distinctly punctured, and there are two irregular foveæ on each side of the middle, rather nearer to the mesial line than the outer margin. The elytra are one-fourth longer than broad; the apical portion is moderately produced and somewhat pointed: the whole upper surface of the elytra is covered with very minute rugæ, and there are moreover some minute tubercles; on the outer half of each elytron is a series of transverse furrows, with convex interspaces equal in width to the furrows.

NYCTELIA SAUNDERSII. *Nyct. atra, oblongo-ovata, nitida; thorace punctato; elytris sulcis transversis pauld irregularibus a margine laterali usque ad medium ductis.*

Long. corp. $7\frac{1}{2}$ lin.; lat. 4 lin.

Hab. Bahia Blanca.

Head distinctly punctured in front. Thorax rather coarsely punc-

tured, excepting on the disc, which is almost impunctate; emarginated in front, the emarginated portion in the form of a segment of a circle; the lateral margin slightly rounded. The hinder part of the thorax and the middle are equal in width; the fore-part is slightly contracted. The elytra are ovate, and but little convex; they are depressed at the suture, most distinctly so near the scutellum. The lateral keel is very prominent, and extending from this keel to the middle of the elytron are distinct transverse furrows, the interspaces of which are convex, and about equal in width to the grooves. The apical portion of the elytra is moderately produced. The three basal segments of the abdomen, as well as the metasternum, are covered with slightly irregular longitudinal rugæ: the terminal segment is punctured. The prosternum and mesosternum are coarsely punctured, and the punctures are confluent.

This is a small species compared with *N. levis* (being about the size of *N. nodosa*); its form is more elongated and much less convex. The lateral margins of the thorax form an even curve from the front to the back.

The specimens from which the above description is drawn up were found by Mr. Darwin in the month of September, on the sandy plains of Bahia Blanca.

NYCTELIA RUGOSA. *Nyct. nigra, opaca, ovata; thorace distinctè punctato; elytris valdè rugosis, sulcis duobus, suturam prope, longitudinalibus et interruptis, impressis.*

Long. corp. $7\frac{3}{4}$; lat. $4\frac{2}{3}$.

Hab. San Blas (near Rio Negro) and Bahia Blanca.

This, which is a small species compared with *N. levis*, approaches that species in general form, but the thorax and elytra are less convex. The head is coarsely punctured in front. The thorax is coarsely punctured, and the punctures are numerous, excepting on the disc: a groove runs parallel with and close to the margins, but at the posterior margin it is interrupted in the middle. The elytra are convex, and of a short ovate form, and the apical portion is but little produced; their width is about one-fifth less than the length: the whole upper surface is covered with coarse and very irregular rugæ. Four somewhat interrupted and irregular striæ run parallel with and near the suture, and there are two abbreviated oblique striæ near the scutellum. Besides the ordinary rugæ of the elytra, there are more marked rugæ, which, though very irregular, have a tendency to a transverse disposition, and these cover the outer half of each elytron. The prothorax is punctured beneath and rugose between the legs, as well as the mesosternum and metasternum. The three basal segments of the abdomen are covered with fine but distinct rugæ, and though these rugæ, for the most part, have a longitudinal direction, they are much more irregular than in most species of the genus. The two terminal segments are punctured, but in the penultimate segment the punctures are very few in number, and confined to the sides. The spines at the apex of the anterior tibiæ are more slender and proportionately longer than in *N. levis*.

Besides the two specimens, one from Bahia Blanca and the other rather further south (San Blas), Mr. Darwin's collection contains a specimen from Tierra del Fuego which is smaller (length $6\frac{2}{3}$ lin., width $3\frac{3}{4}$ lines) and proportionately narrower; but these differences are combined with a greater length of tarsus, and are precisely such differences as exist between the sexes of other species; in fact, it is no doubt the male of the insect from which the above description is taken.

NYCTELIA WESTWOODII. *Nyct. breviter ovata, nitida, atra; capite subpunctato; thorace transverso, posticè paulò latiore quam anticè, levitè convexo, lævi, margine laterali imperspicuè crenulato; elytris ovatis, profundè striatis, interstitiis convexis, striis utrinque ad suturam duabus longitudinalibus, striis reliquis obliquis.*

Long. corp. $7\frac{1}{2}$ lin.; lat. $4\frac{3}{4}$ lin.

Hab. Port Desire.

Head with a few punctures in front. Thorax convex, about twice as broad as long, with the middle and hinder parts about equal in width, and the fore-part contracted; the anterior part emarginated, the emarginated portion in the form of a segment of a circle; the hinder margin but slightly waved; a distinct groove runs close to the anterior and lateral margins, which latter are crenulated. Elytra short and rounded; the length and width equal, if the produced apical portion be omitted in the measurement; the apex is moderately produced: the whole surface of the elytra is covered with deep striæ, leaving convex interspaces which are scarcely broader than the grooves; on each side of, and parallel with the suture, are two of these striæ; the remaining grooves are oblique, and for the most part converge towards the apical portion of the elytra: on the sides of the elytra, and more especially towards the apex, the grooves have a tendency to a transverse disposition. The mentum is very coarsely punctured, and there are some distinct punctures on the sides of the head beneath. The prothorax presents a few large scattered punctures beneath, some short irregular (but for the most part transverse) rugæ at the lateral margin, and some longitudinal rugæ near the base of the legs; between the legs the prosternum has some confluent punctures; the mesosternum and metasternum have irregular rugæ, and the three first abdominal segments have minute longitudinal furrows; the penultimate segment is smooth, and the apical one is finely punctured, but the punctures are by no means numerous. The legs and antennæ are rather shorter than usual in the genus.

NYCTELIA STEPHENSII. *Nyct. atra, nitida, lævis; thorace subquadrate; elytris rotundato-ovatis, convexis, carinè laterali prominente et crenulatâ; elytrorum apicibus productis latis et subcomplanatis.*

Long. corp. 7 lin.; lat. $4\frac{1}{3}$ lin.

Hab. St. Cruz.

Head with scattered punctures in front. Thorax transverse, the width being rather less than double the length; the upper surface is but little convex; the anterior and posterior margins are nearly

straight, but the anterior angles are produced and the posterior angles are slightly produced. The width of the fore and hind parts of the thorax is nearly equal, it being but slightly narrower in front, and the sides deviate but little from a straight line; a faint dorsal channel is observable, and a groove runs parallel with and close to the lateral and anterior margins. With the assistance of a strong lens, minute punctures may be observed scattered over the upper surface of the thorax, and some minute tubercles on the under. The elytra are convex, and of a short rounded form, the width and length being very nearly equal, if we do not include the produced apical portion, which is more dilated than in most of the genus, and is nearly flat. A groove runs close to and parallel with the lateral keel, both above and below, and this keel is distinctly crenulated. The upper surface of the elytra presents numerous indistinct and very shallow foveæ. The abdominal segments are almost smooth. The legs are proportionately rather longer than in *N. lævis*.

Mr. Darwin found this species at St. Cruz in the month of April.

NYCTELIA NEWPORTII. *Nyct. elongato-ovata, nigra, nitida; capite transversè impresso; thorace lato plus quàm longo, lateribus rotundatis; anticè et posticè latitudine compari; supernè minimè convexo, impunctato, ad latera rugis parvulis obliquis; elytris ovatis, lævibus, plagâ suturali valdè impressis, marginibus lateralibus crenulatis.*

Hab. Patagonia.

Long. corp. 10 lin.; lat. 6 lin.

This species is rather smaller than *N. lævis*, and differs moreover in being of a more elongated form, and most especially in the form of the thorax, which is narrower and nearly equal in width, in front and behind: the apical portion of the elytra is much less produced, and the produced portion is broader. The head is sparingly punctured at the sides, and has a curved impression, the chord of which is rather in front of the insertion of the antennæ. The thorax nearly one-third broader than long (taking the length from the anterior and posterior angles); it is broadest in the middle, and a trifle narrower in front than behind; the lateral margins form an even curve; the anterior part is emarginated, the emarginated portion being in the form of a segment of a circle, and a little less than a semicircle: the anterior angles acute, and the posterior angles form very nearly right angles: the hinder margin of the thorax is nearly straight, but the line descends slightly towards the angles. The surface of the thorax is very little convex, and almost impunctate, there being but a few scattered very minute punctures; on the sides, running inwards and upwards, are a series of minute grooves, like scratches, and on the hinder margin a faint trace of very short longitudinal grooves is visible. The elytra are ovate, convex, smooth, and glossy; the region of the suture is broadly and rather deeply depressed; the lateral keel is prominent and distinctly crenulated, and joining this keel are a series of shortish transverse furrows. The under surface of the body and thoracic segments is remarkable for the almost

total want of sculpturing, if we except some longitudinal furrows on the under side of the prothorax at the sides.

The exact habitat of the specimen from which the above description is taken is not known, but in Mr. Darwin's collection is a specimen which I am inclined to regard as specifically identical, and which is from St. Julian. It has the elytra proportionately rather broader and the thorax narrower, and the short longitudinal furrows on the hinder margin of the thorax are distinct; the sutural portion of the elytra is less depressed.

NYCTELIA GUERINII. *Nyct. atra, nitida, ovata; capite transversim impresso; thorace subquadrato in medio pauld dilatato, anticè emarginato, posticè ferè recto; ad marginem lateralem sulcis minutis valdè obliquis insculpto; elytris ovatis, convexis, ad apicem pauld productis, ad latera rugis transversis in seriebus tribus dispositis.*

Long. corp. $9\frac{1}{2}$ lin.; lat. $5\frac{3}{4}$ lin.

Hab. St. Cruz.

Rather smaller than *N. levis*. Head with small punctures very thinly scattered over the upper surface, and with a transverse impression rather in front of the line of the eyes. Thorax subquadrate, the breadth not quite equal to twice the length; the emarginated portion in front in the form of a segment of a circle; the hinder margin nearly straight; the posterior angles scarcely produced, and forming nearly right angles; the anterior angles acute. The thorax is contracted in front, broadest in the middle, and the lateral margin from the middle to the posterior angles forms nearly a straight line: on the hinder part of the upper surface are some extremely minute punctures, and at the sides are some small oblique grooves. The elytra are ovate and moderately convex, and the apical portion is but little produced; the region of the suture is very slightly indented: the sides of the elytra are covered with transverse grooves having narrow convex interspaces; these grooves extend inwards to about the middle of each elytron, and are arranged in three series, being divided by two longitudinal lines; the innermost series is indistinct: the lateral keel is distinctly crenulated. The mentum is distinctly punctured; the prosternum, as well as the other thoracic segments, and the abdominal segments, have the usual sculpturing, but it is less strong than usual.

It is with some hesitation that I name this insect, since it approaches very near to the *N. Newportii*; it differs, however, in having the thorax smaller and proportionately narrower, the elytra less convex, and furnished at the sides with three rows of transverse impressions instead of one; the region of the suture is less depressed.

NYCTELIA SULCICOLLIS. *Nyct. ovata, atra; thorace transverso, ad latera rotundato, anticè angustiore, sulcis minutis longitudinalitèr impresso; elytris crebrè punctatis (punctis confluentibus), tuberculisque minutis instructis: capite, thorace elytrorumque lateribus pilis vestitis, pedibusque etiam pilis instructis.*

Long. corp. $8\frac{1}{4}$ lin.; lat. $5\frac{1}{2}$ lin.

Hab. St. Cruz.

Much smaller than *N. levis*, and of a shorter and more rounded form. The upper surface of the head is very thickly punctured throughout, and the punctures run into each other so as to form irregular rugæ. The thorax is twice as broad as long, and has a deep and almost semicircular emargination in front; the anterior angles are acute, and the posterior angles are obtuse, and not produced as in many species of the genus, the hinder margin of the thorax presenting a nearly straight, or but very slightly waved line: the broadest part of the thorax is near the posterior angles, the narrowest part is in front, and the lateral margins are rounded in such a manner that the thorax might almost be described as semicircular, and having the fore-part emarginated. The whole upper surface of the thorax is covered with small but distinct grooves, leaving convex ridges between them about equal in width to the grooves; these furrows are longitudinal in their direction, or very nearly so, excepting in the fore-part, where they diverge from the mesial line and run up to the anterior margin, and at the sides of the thorax, where the grooves are irregular, but have a tendency to a transverse disposition. The under side of the thorax presents similar longitudinal grooves, excepting in the middle, where it is rugosely punctured; scattered hairs cover this under surface of the thorax; and towards the lateral margin the hairs, which are moderately long, are much more numerous and form a projecting fringe, which is visible when the insect is viewed from above. The elytra are of a short ovate form, about one-fourth broader than the thorax, and scarcely one-fifth longer than broad; the apical portion is but little produced: the upper surface is convex, and is thickly covered with small confluent punctures, amongst which minute tubercles are scattered; towards the lateral keel, which is very little prominent, the tubercles are distinct. The sculpturing of the portion of the elytra beneath the keel resembles that above it, but here the tubercles give origin to small hairs*. The meso- and metasternum present irregular rugæ. On the first and basal half of the second abdominal segments are distinct longitudinal rugæ, and a slight trace of similar rugæ is observed at the base of the third segment; on other parts of these segments are some minute scattered punctures. The terminal segment is rather thickly though finely punctured. The legs are clothed with longish ash-coloured hairs.

Nyctelia nodosa, Latr. *Zophosis nodosa*, Germar ?

Five specimens of this species are contained in the collection of Mr. Darwin, and these are from three different localities, viz. Maldonado (La Plata), Bahia Blanca, and Mendoza.

NYCTELIA ANGUSTATA. *Nyct. atra, elongata, nitida; capite distinctè punctato et transversim impresso; antennis piceis; thorace subquadrato, lateribus ferè rectis, anticè emarginato, suprà punctis minutissimis; elytris subelongatis, et cum thorace quoad latitudinem ferè coequalibus, costis aliquantò irregularibus subelevatis interstitiis rugulosis, ad latera plicis transversalibus.*

* Probably similar hairs originally sprang from the tubercles on the upper surface, but have been worn off.

Long. corp. $7\frac{1}{4}$ lin.; lat. $3\frac{2}{3}$ lin.

Hab. Patagonia?

The specimen from which the above characters are taken is a male, and by accident its label, containing the habitat, is lost; it is most probably from Patagonia. In general appearance the *N. angustata* greatly resembles the *N. nodosa*, but it differs in being of a narrower form, and in having the terminal joints (the fifth to the tenth inclusive) broader; the anterior tibiæ are also broader and rather shorter, and the thorax is longer in proportion to the width.

The head is distinctly and very thickly punctured in front. The thorax approaches to a quadrate form, but is slightly narrower in front than behind; the lateral margins form a very slight curve, and in fact are nearly straight; in front it is emarginated, and the emarginated portion is in the form of a segment of a circle; the hinder margin is but little waved; the anterior angles are acute, and the posterior angles are slightly produced and rounded at the point; a faint impressed line borders the anterior and lateral margins: the upper surface is but little convex and finely punctured, but on the disc the punctures are scarcely traceable: the length of the thorax is about equal to three-fifths of the width, whereas in *N. nodosa* the length is about equal to half the width. The elytra are very little broader than the thorax, being scarcely dilated in the middle, and are about one-third longer than broad; they have interrupted and somewhat irregular longitudinal grooves or striæ, and the interspaces are convex; the third and fifth most distinctly so: the striæ and interspaces on the lateral half of each elytron have distinct irregular rugæ, the largest of which are for the most part transverse in direction: the legs are long; the claws are of a pitchy colour. The fifth, sixth, seventh and eighth joints of the antennæ are somewhat compressed, broader than long, and produced in front so as to present nearly a triangular form; the ninth and tenth are still broad, but of a somewhat rounded form.

GENUS EPIPEDONOTA.

EPIPEDONOTA RUGOSA. *Epip. atra, opaca: capite rugoso; thorace lato plusquam longo, posticè angustiore, depresso supernè rugis valdè irregularibus, illis apud marginem exteriorem plerùmque longitudinalibus, illis apud discum ferè transversis, et utrinque costâ majore sublongitudinali definitis; elytris subovatis undatim rugis plerùmque transversis, et utrinque costâ apud discum valdè elevatâ, deindè alterâ minus elevatâ inter illam et carinam lateralem.*

Long. corp. $8\frac{1}{2}$ lin.; lat. $3\frac{3}{4}$ lin.; vel, long. $11\frac{1}{3}$; lat. $5\frac{3}{4}$.

Hab. Petorca?

The whole upper surface of this insect is covered with well-marked irregular rugæ; these are for the most part longitudinal in their direction on the clypeus, and there is a transverse indentation marking the posterior boundary of this part: a little behind the line of the eyes is a somewhat irregular transverse ridge, and in the middle, between this ridge and the transverse groove just mentioned, is a short longitudinal ridge. The labrum is rugosely punctured. The thorax is very nearly twice as broad as long; its anterior and posterior

margins are nearly straight, excepting near the lateral angles, which are produced. Besides the ordinary rugæ on the thorax, there are two large longitudinal and slightly curved ridges, situated one on each side, nearly midway between the mesial line and the outer margin; and on each elytron is a strongly elevated costa or ridge, extending from the base very nearly to the apex, and running nearly parallel with the lateral keel of the elytron, on the mesial line of which they are placed. The spaces between these costæ is somewhat concave, and so is the interstice of the costa and the lateral keel of the elytron, which is crenulated or irregularly indented. The mentum is very coarsely punctured, and the punctures are confluent. The under side of the head is punctured, and there are numerous coarse punctures on the prosternum between the legs. The basal segments of the abdomen have small longitudinal sulci beneath.

Besides the great difference in size and form indicated by the dimensions, there occurs sometimes a difference in the sculpturing of the thorax and elytra, which I could scarcely have believed to exist in the same species had I not had an opportunity of examining many specimens. In a specimen before me, the rugæ on the head, thorax and elytra are much less distinct than in the individuals from which the above description is taken; and this is combined with a convexity of the elytra (which are almost always concave between the two dorsal costæ and also between these costæ and the lateral keel), giving a very different aspect to the specimen under consideration.

In having the thorax distinctly contracted behind, and in the more truly moniliform structure of the antennæ, the present insect approaches more nearly to *Callyntra* than to *Epipedonota*, but the terminal joint of the antennæ is decidedly smaller than the rest. I have before me specimens of the *Callyntra multicostata* and *Call. vicina* (which I scarcely think a distinct species), and do not find so marked a difference in the size of the terminal joint of the antennæ as compared with the penultimate joint, as that represented by M. Solier's figure—indeed the penultimate joint and terminal appear to me to be equal in size, or *most* nearly so.

EPIPEDONOTA AFFINIS. *Epip. atra, nitida*: capite anticè punctis sparsis, et posticè rugis transversis undulatis, notato; thorace latiore quàm longo, ad medium depresso, rugis vel plicis ferè longitudinalibus, ad latera transversis notato; clytris thorace latioribus, propè suturam ferè lævibus, singulorum dimidio externo sulcis transversis, his costâ longitudinali, in duas series divisis; prosterno sulcis distinctis longitudinalibus; segmentis abdominalibus levitè longitudinali-sulcatis.

Long. corp. $9\frac{1}{2}$ lin.; lat. $5\frac{1}{3}$ lin.

Hab. Petorca?

This species is of a shorter and broader form than *Epip. ebenina*, the furrows on the thorax are smaller and more numerous, and the elytra present but one distinct costa besides the lateral keel, the ridge corresponding to that nearest the suture in *E. ebenina*, being here obliterated, or very nearly so.

The head presents some scattered punctures in front, and, generally, there are some waved transverse impressions towards the hinder part, leaving narrow ridges between them. The thorax is twice as broad as long, has the sides distinctly rounded, the fore-part emarginated in the form of a segment of a circle; the anterior angles are acute, and there is a small indentation in the outer margin close to the angle; the posterior margin is nearly straight in the middle, but the angles are produced: the upper part of the thorax presents a slightly concave surface, and is covered with small sulci; those in the middle are oblique, converging to or towards the hinder part of the mesial line; about midway between this line and the outer margin they become longitudinal in their direction, and a space bordering the lateral margin is covered with oblique but nearly transverse narrow grooves and ridges. The width of the elytra, compared with that of the thorax, is nearly as seven to five, and the elytra are about one-fourth longer than broad, or rather less; the dorsal surface is plane and almost destitute of sculpturing; on the sides are two series of transverse furrows, which are separated by a strong costal ridge; the innermost of these two series of transverse grooves is obliterated towards the base and apex of the elytron, but in the middle they are strongly marked, as are also the transverse grooves between the costal ridge and the lateral keel: on the apical half of each elytron a faint trace of the costa, corresponding to the innermost one in *E. ebenina*, is observable.

Numerous specimens of this new species were contained in Mr. Bridges's collection.

Epipedonota ebenina, Solier. *Nyctelia ebenina*, Auct.

Four specimens of this species were brought by Mr. Darwin from Mendoza; two of these are females, and present a character I have not before observed in the species, viz. some zigzag white lines at the apex of the elytra; these lines are observable in the grooves between the costæ: in one specimen there are three of the white lines on each elytron, corresponding with the number of interspaces of the costæ; they are interrupted, and form dots as they recede from the apex of the elytron. In the other specimen there are but two of these lines visible.

Epipedonota erythropus, Solier. *Nyctelia erythropus*, Auct.

Mr. Darwin also found this species (if it be really distinct from *ebenina*) at Mendoza.

EPIPEDONOTA BONARIENSIS. *Epip. atra, nitida; thorace suprâ irregulariter et longitudinaliter multiplicato, ad latera crenato; elytris utrinque costis duabus elevatis, et sulcis transversalibus ordine triplici.*

Long. corp. $11\frac{1}{2}$ lin.; lat. $5\frac{3}{4}$ lin.; vel, long. $9\frac{2}{3}$ lin.; lat. 5 lin.
Hab. Monte Video and Bahia Blanca.

The species nearly resembles the *E. ebenina*, but differs in being larger and proportionately broader; as in *E. ebenina*, each elytron has two longitudinal elevated costæ besides the lateral keel; but the interspaces of all the costæ are indented with transverse furrows, whereas in *E. ebenina* only the two outermost interspaces have these

furrows, and here they are much less strongly marked. The lateral keel in *E. ebenina* presents a nearly even line, but in *E. Bonariensis* the keel is distinctly indented; the sulci on the thorax are less strongly marked and more numerous.

Seven specimens of this species occur in Mr. Darwin's collection.

EPIPEDONOTA LATA. *Epip. atra, nitida, lata; capite punctis dispersis anticè, apud medium sulco transverso, et posticè sulcis paucis obliquis; thorace sulcis, his obliquis, illis apud medium longitudinalibus, illis margini proximis transversis, insculpto; elytris convexis costis latis pauld̄ elevatis posticè subobliteratis, spatio inter costam secundam et carinam externam, sulcis profundis transversis notato.*

Long. corp. $9\frac{3}{4}$ lin.; lat. 6 lin.; vel, long. $8\frac{2}{3}$ lin.; lat. 5 lin.

Hab. Port Desire.

This species is larger and proportionally much broader than *E. ebenina*. The thorax, in proportion to the size of the insect, is much broader than in any other species of *Epipedonota* here described, the width being nearly equal to two-thirds of the length of the elytra; whereas in *E. affinis*, which I have described as a shorter and broader species than *E. ebenina*, the width of the thorax is scarcely more than equal to half the length of the elytra.

The head is punctured in front and has some waved transverse grooves and ridges between the eyes. The thorax is about twice as broad as long, emarginated in front nearly in the form of a segment of a circle; the lateral margins are rounded; it is widest a little behind the middle and narrowest in front; the anterior and posterior angles are acute; the upper surface is nearly flat, but the lateral margins are slightly reflected; the anterior mesial portion is a little convex, and the posterior mesial portion is sometimes slightly concave; the whole surface is covered with narrow grooves and ridges; those on the dorsal part of the thorax are longitudinal but slightly irregular, towards the sides they are oblique, diverging slightly behind, and a broadish space at the sides is covered with sub-transverse grooves, these being directed inwards and slightly upwards from the lateral margin. The width of the elytra, as compared with the length, is as 4 to 5; their upper surface is convex, excepting at the base, where they are somewhat depressed: on each elytron are three longitudinal narrow grooves, these are distinct and wavy at the base of the elytra; the first groove, or that nearest the suture, is obliterated on the hinder half of the elytron; the second is continued nearly to the apex, but from the base it becomes gradually less distinct; the third extends to the apex, and forms as it were the outer boundary to the convex portion of the elytra for the space between the last-mentioned line and the lateral keel, which is nearly equal in width to one-third of that of the elytron, is nearly flat, or even slightly concave in the males; on this space is a series of deep transverse indentations, leaving convex interstices of a width corresponding to that of the grooves. The two interspaces between the first, second and third striæ of each elytron are very broad and slightly convex; and on the second or outermost of these interspaces are a few oblique furrows, which are not very distinct, and for the most part rather widely separated. Be-

sides the longitudinal striæ mentioned, there are some others, but these are short and confined to the base of the elytra; in the males about five or six longitudinal grooves may be seen at the base of each elytron, and all of these grooves are more or less wavy. The sides of the prosternum present distinct longitudinal sulci, and narrow longitudinal sulci are observable on the abdominal segments.

Three specimens of this new species were brought from Port Desire by Mr. Darwin.

Genus *CALLYNTRA*, Solier.

Callyntra vicina, Solier. One specimen of this species was brought from Valparaiso by Mr. Darwin.

Genus *CEROSTENA*, Solier.

CEROSTENA PUNCTULATA. *Cer. atra, elongato-ovata*; capite crebrè punctato et transversim impresso; thorace transverso, anticè profundè emarginato, suprâ ferè plano, punctato; marginibus lateralibus reflexis, disco foveis duabus impresso; elytris oblongo-ovatis, paulò convexis, suprâ punctulatis, singulis costis duabus dorsalibus subobliteratis; carinâ laterali paulò prominente.

Long. corp. $8\frac{3}{4}$ lin.; lat. $4\frac{3}{4}$ lin.

Hab. St. Cruz.

In general appearance the present species resembles the *Blaps obtusa*, but the thorax is much shorter and the body more depressed. On the hinder part and sides of the elytra is an ashy pubescence, and I think it probable that small hairs have originally been scattered over the whole upper part of the elytra and have been rubbed off the most exposed parts. On the under side of the head and body small hairs are also perceptible in the less exposed parts. The prosternum is very rugose beneath on the fore-part, and has distinct longitudinal furrows at the sides, as has also the mesothorax; the abdominal segments are thickly punctured, and there are longitudinal rugæ on the basal segments. The legs and tarsi are moderately well clothed with small yellowish hairs.

Unfortunately the antennæ are not perfect in the only specimen which Mr. Darwin brought home of this species; in the characters afforded by other parts, however, it agrees with M. Solier's genus *Cerostena*: the absence of sulci on the upper surface of the thorax would serve to distinguish it from the species of that genus hitherto described.

Psectrascelis pilipes, Solier. *Nyctelia pilipes*, Guerin. Numerous specimens of this species were brought from Coquimbo by Mr. Darwin.

Entomoderes Erebi, Solier. Mr. Darwin's collection contains one specimen of this curious insect, and this was found at Mendoza.

GEOLOGICAL SOCIETY.

Dec. 15, 1841.—A paper was read, "On the occurrence of the Bristol Bone-Bed in the Lower Lias near Tewkesbury," by Hugh Edwin Strickland, Esq., F.G.S.

After alluding to the occurrence of the bone-bed at various places between Westbury and Watchett, also at Golden Cliff and St. Hilary

in Glamorganshire, and at Axmouth, Mr. Strickland proceeds to describe its characters at three newly discovered localities, many miles to the north of the points previously known, namely, Coomb Hill, between Tewkesbury and Gloucester, Wainlode Cliff, and Bushley.

1: *Coomb Hill, four miles south of Tewkesbury**.—In lowering the road through the lias escarpment during the summer of 1841 a considerable surface of the bone-bed was exposed, and its contents were rescued from destruction by Mr. Dudfield of Tewkesbury. The following section is given by Mr. Strickland:—

	Ft.	in.
1. Yellow clay	2	0
2. Lias limestone	0	3
3. Yellow clay	5	0
4. Nodules of lias limestone	0	6
5. Brown clay	14	0
6. Impure pyritic limestone with Pectens and small bivalves	0	6
7. Black laminated clay	8	0
8. Hard, grey pyritic limestone	0	2
9. Black laminated clay	1	0
10. Greyish sandstone	0	2
11. Black laminated clay	1	6
12. <i>Bone-bed</i>	0	1
13. Black laminated clay	3	6
14. Compact, angular, greenish marl.	25	0
15. Red marl	3	0
Dip about 12° east.	64	8

The bone-bed, No. 12, rarely exceeds one inch in thickness, and frequently thins out to less than a quarter of an inch. It consists in some places chiefly of scales, teeth and bones of fishes, and small coprolites cemented by iron pyrites, but in others the organic remains are rare, and are replaced by a whitish micaceous sandstone. The osseous fragments, Mr. Strickland states, have the appearance of having been washed into the hollows of a rippled surface of clay, and of having been subjected to slight mechanical action. The existence of gentle currents is further proved, he says, by the presence of small rounded pebbles of white quartz, a substance of very rare occurrence in the liassic series. The only shell found in the bed at Coomb Hill is a smooth bivalve, but too imperfect to be generically determined.

2. *Wainlode Cliff, three miles west-south-west from Coomb Hill*.—The section exposed at this locality has been laid open by the action of the Severn, and consists of the following beds:—

* Mr. Murchison has noticed the section formerly exposed in this escarpment, but at the time he examined the district, Mr. Strickland says, the banks were obscured by debris, and the bone-bed did not attract his attention. See Mr. Murchison's Account of the Geology of Cheltenham, p. 24, plate, fig. 1, and Silurian System, pp. 20, 29, pl. 29, fig. 1.

	Ft.	in.
1. Black laminated clay, inclosing, near the top, a band of lias limestone with <i>Ostreae</i>	22	0
2. Slaty calcareous sandstone, with a peculiar small species of <i>Pecten</i>	0	4
3. Black laminated clay	9	0
4. <i>Bone-bed</i> , passing into white sandstone.	0	3
5. Black laminated clay	2	0
6. Light green angular marl	23	0
7. Red marls, with zones of a greenish colour ..	42	0
Dip very slight to the south.	98	7

The bone-bed is far less rich in organic remains, accumulations of fragments of bones and coprolites occurring at rare intervals; and its prevailing character is that of a fissile, white, micaceous sandstone, sometimes acquiring a flinty hardness. The upper surface of the bed is ripple-marked, and in some cases presents impressions considered by Mr. Strickland to have been probably made by the claws of crustacea. A small bivalve is also the only shell found in the bed. The stratum No. 2, the author says, is evidently a continuation of No. 6. of the Coomb Hill section.

3. *Bushley, two miles and a half west of Tewkesbury.*—The intersection of the lias escarpment by the Ledbury road near Bushley afforded Mr. Strickland the following section:—

	Ft.	in.
1. Black laminated clay, about	10	0
2. Lias limestone	0	4
3. Black laminated clay	6	0
4. Compact slaty bed with numerous small bivalves, and the <i>Pecten</i> of Wainlode and Coomb Hill	0	3
5. Black laminated clay	9	0
6. <i>White micaceous sandstone</i> , with impressions of two species of bivalve shells	1	0
7. Black laminated clay	2	6
8. Greenish marl, about.	20	0
9. Red marl.	—	—
Dip about 8° east.	49	1

The sandstone bed, No. 6, agreeing precisely with that at Wainlode Cliff, Mr. Strickland does not hesitate to consider it the representative of the bone-bed, though organic remains are wanting; and he points out the identity of the stratum No. 4. with the beds Nos. 2. and 6. of the preceding sections. The author also refers to the railway section near Droitwich, and identifies with the bone-bed the two-feet band of white micaceous sandstone six feet above the top of the green marl, as it contains the same indeterminable small bivalve. He has also examined sections of the lias escarpment at Norton near Kempsey, and Cracombe Hill near Evesham, and has

invariably detected, a few feet above the base of the lias clay, a thin band of white sandstone containing the same shell.

The bone-bed at Axmouth, Watchett, Aust, Westbury, and other southern localities, occupies precisely the same geological position, or a few feet above the top of the greenish marls which terminate the New Red system, though much more rich in organic remains; and Mr. Strickland draws attention to this remarkable instance of a very thin stratum ranging over a distance of about 112 miles.

The great abundance of fossils in some parts of this stratum the author considers an indication that a much longer period probably elapsed during its deposition, either on account of the clearness of the water or of a gentle current which prevented the precipitation of muddy particles, than while an equal thickness of the less fossiliferous clays above or below it was accumulated.

The list of organic remains given in the paper includes scales of *Gyrolepis tenuistriatus?* and *Amblyurus*; teeth of *Saurichthys apicalis*, *Acrodus minimus*, *Hybodus minor*, *Pycnodus?*; others bearing an analogy to those of *Sargus*; portion of a tooth with two finely serrated edges, and considered as probably belonging to a saurian allied to the genus *Palæosaurus*; a tooth of *Hybodus De la Bechei* (*H. medius*, Ag.), a ray of *Nemacanthus monilifer*; small vertebra of a fish; bones of an Ichthyosaurus; coprolites; and the casts of the bivalve before mentioned.

Mr. Strickland next alludes to Sir Philip Egerton's paper on the Ichthyolites of the bone-bed, and he states that the bed cannot be of the age of the muschelkalk, as it overlies the red and green marls, which he considers to have been satisfactorily shown to be equivalent to the Keuper sandstein of Germany; and that the occurrence of muschelkalk fishes associated with lias Ichthyolites only justifies the inference that certain species survived from the period of the muschelkalk to that of the bone-bed. There are yet stronger grounds, Mr. Strickland states, for placing the bone-bed in the liassic series in the remarkable change a few feet below it, from black laminated clay to compact "angular" marl, greenish in the upper part and red below; and he adds, the transition is so sudden that it may be defined within the eighth of an inch; moreover no marl occurs above the line nor black laminated clay below it; and although, in the case of the bone bed, an arenaceous deposit similar to the Keuper sandstein is repeated, accompanied by some triassic organic remains, yet, the author adds, this does not invalidate the evidence of the commencement of a new order of things, or of an interesting passage into the liassic series from the triassic system.

Lastly, Mr. Strickland notices the occurrence of precisely analogous bone-beds in the Upper Ludlow rock, described by Mr. Murchison in the 'Silurian System' (p. 198), and in Caldby Island, near the junction of the carboniferous limestone with the old red sandstone; and he offers some remarks on the bone-beds being found in all the three cases near the passage from one great geological system of rocks to another.

January 5, 1842.—“A Notice on the Fossil Bones found on the surface of a raised Beach at the Hoe near Plymouth,” by Edward Moore, M.D., F.L.S., was first read.

At the Meeting of the British Association at Plymouth, Dr. Moore read a paper on the same subject as that which forms part of the present communication*. In this notice he first alludes to the discovery of the beach by the Rev. R. Hennah in 1827†, and to Mr. De la Beche's account of numerous anciently raised beaches in Devon and Cornwall‡; he then briefly describes the characters of the beach, its position in a hollow in the limestone rock, 100 feet wide, 70 feet deep, and, at its base, 35 feet above the present high water mark. He also notices a projecting ledge of limestone stretching several hundred feet southward from this spot, and which sustained a mass of sand, with rolled pebbles and blocks, some of them two or three feet in circumference, and forming a hill twenty to twenty-five feet high, containing patches of loose sand with fragments of *Patella* and *Buccinum*. It was, says the author, easily traced by several patches along the rocks, and proved, by its structure and contents, to be a continuation of the same beach. Dr. Moore likewise briefly describes another deposit 100 yards westward of the beach, and at a greater elevation, being 88 feet above high water, 50 feet in extent, and 10 in thickness, covered irregularly by soil.

The animal remains more particularly enumerated by Dr. Moore consist of a molar and part of the jaw of a young elephant; a femur of a rhinoceros; maxillary bones of a bear, with the malar and palatine processes, and two teeth in each; an entire right lower ramus with teeth and tusks, the latter much worn; four separate tusks; several fragments of long bones; fragments of jaws of the horse containing teeth, numerous loose teeth, portions of long bones, and two caudal vertebræ; likewise portions of a deer's jaw containing teeth. The quantity of the bones which has been found is stated to be equal to several bushels. The vertebræ of a whale, much rounded, were also discovered, with undeterminable portions of ribs. The animals to which the above remains belonged, are considered by Dr. Moore to have coexisted with those which inhabited the caves of Devonshire.

The author then enters upon a defence of the opinions contained in his paper read at Plymouth, respecting the mode of accumulation of the bones. He states that these osseous remains cannot have been derived from the emptying of some cave, because the mass of superincumbent matter which has been removed from above the beach proves that the bones must have been deposited where they were found at a very ancient period, and long before they could have been affected by human agency. There are also no known caves

* Athenæum, No. 721, and the volume of Reports of the British Association for 1841, Trans. of the Sections, p. 62 (published 1842).

† See also “A Succinct Account of the Lime Rocks of Plymouth,” by the Rev. R. Hennah, 1822, p. 58.

‡ Manual of Geology, 3rd Edition, p. 173, 1833; also Report on the Geology of Cornwall and Devon, p. 423, 1839.

containing bones sufficiently near. On the contrary, says Dr. Moore, if the sea was at one time at the level indicated by the beach, the Hoe must have been an island accessible by animals at low water, and there appears no obstacle to the supposition that the bears might have selected the beach to devour their prey; and the stranded whale may have added to the banquet. Whether the bones were drifted or not, their occurrence on the top of the beach, and not in it, prevents, the author says, any identity of time in their origin; but that the beach previously existed, and was of marine origin, is proved by the resemblance of the deposit to a modern beach, and its containing sea-shells of the existing period, although few in number.

That the deposit is not the result of glacial action, the author observes, is probable from the want of any indication of such action in the neighbouring district; and though he does not presume to assert that this may not be a cause of drift generally, and even of the upper deposit in the same locality, yet he contends that the dissimilarity in the composition of the lower deposit sustains him in the supposition of its being of different origin, and really a deposit from the sea. Lastly, Dr. Moore, in reference to the present position of the beach far above any point attained by the sea during the greatest storms, states that the deposit must have been elevated by natural causes; and that, however uncertain the exact period of such an event, it seems to have occurred at a time probably more recent than the epoch when the extinct animals disappeared.

Appended to the paper, is a notice of a specimen of perforated limestone taken from the Hoe Lake quarries, eighty-five feet above the present level of high water, and Dr. Moore maintains his belief that the perforations were formed by Pholades, and not by snails.

“Notice on the occurrence of Plants in the Plastic Clay of the Hampshire Coast,” by the Rev. P. B. Brodie, F.G.S., was then read.

The cliffs to the east and west of Bournemouth are composed of horizontal strata belonging to the plastic clay formation. East of the town they consist of white and yellow sands, the former containing fragments of wood. Further along the shore the cliffs are higher, and beds of clay full of vegetable remains appear under the sands. About half a mile beyond, a stratum of fine white sand, three or four feet thick, situated near the middle of the cliffs, contains impressions of ferns; and a layer of sand and clay is full of small leaves. The subjacent strata of clay are separated by thin layers of vegetable matter. Somewhat further, beds of white and yellow sand and sandy clay abound with beautiful leaves, and the surface of the strata is in some places covered with a thin layer of iron-sand containing impressions of ferns. In most cases, the various coloured sands are divided by beds of clay, and their fossil contents are distributed in layers at rather distant intervals. Mr. Brodie did not discover any shells. Several of the fossil plants are stated by the author to belong to the *Lauraceæ* and *Amentaceæ*; but he

says that these, as well as others which he arranges among the *Characeæ* and Cryptogams, and some of which he has not determined the characters, are all generically distinct from any British plant, and belong to those of a warmer climate. When the sandstone is freshly broken the epidermis of the fossil frequently peels off, leaving the impression of only the fibres. These remains often form masses of some thickness; and, from their state of preservation, must, the author states, have been deposited tranquilly beneath the waters.

MISCELLANEOUS.

PLUMATELLA REPENS.

Having this day, in the vicinity of Cheshunt, in a pond whose waters are perennial, met with several fine specimens of the above zoophyte, and these being in a living state, I had an excellent opportunity of comparing its polype with that of *Alcyonidium stagnorum*, which I procured in a pond on Acton Green, Middlesex, some time since and then examined, and I find that the polypi agree in all respects in the two species, the tentacula being arranged upon a crescentic disc in both, and their number corresponding, there being usually about fifty, seldom more than sixty, or less than forty in each polype. The ova too are of the same form in both species.

Plumatella repens and *Alcyonella stagnorum* ought therefore without doubt to be regarded as generically identical, for the difference in the mode of branching can scarcely be regarded as affording a character of generic importance: whether they are so specifically or not, has yet to be ascertained, I believe, but I am strongly inclined to think that they are not.

Whenever I have found *Alcyonidium stagnorum*, I have always noticed that it has been attached to pieces of stick, the stems of vegetables, or to some substance which would not necessarily perish and decay in a few weeks, and that some of the specimens were of such a size, being as large as the closed hand, as to lead to the supposition that many months must have elapsed before they could have attained such a development; whereas all the specimens of *Plumatella repens* which I have met with were attached to the decayed leaves of *Typha latifolia*, which in a few short weeks would, as a matter of necessity, be utterly decomposed, involving the zoophyte upon it in its own destruction. In some of my specimens the polypidom has crept over the leaves for several inches, and in all of them without either raising itself from the surface of attachment or exhibiting aggregations of cells, as it might be supposed that it would do were it merely a condition of *Alcyonidium stagnorum*.

September 8th, 1842.

A. H. HASSALL.

NOTES ON THE USES OF SOME MADAGASCAR PLANTS TO THE NATIVES.

On looking, in the process of arrangement, through some plants from Madagascar, forwarded to the Herbarium of the Army Medical